

# Compact Raman Spectrometer For In-Situ Planetary Chemistry, Phase I

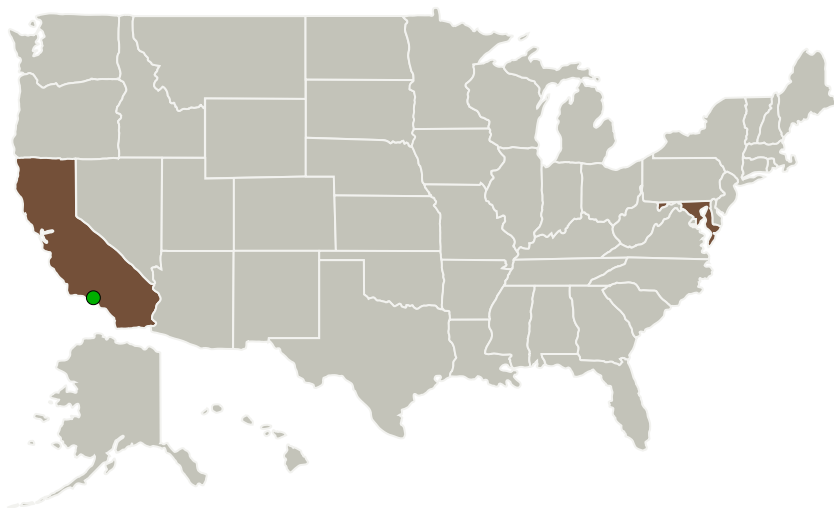
Completed Technology Project (2016 - 2016)



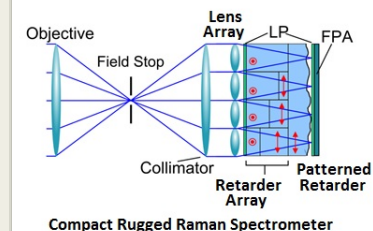
## Project Introduction

In this proposal, we demonstrate a new Raman imaging sensor based on a compact, CCD-mounted spectrometer. This enables high sensitivity and specificity for UV-Raman that will be capable of full-frame imaging, thus reducing size, weight, and power requirements, as well as eliminating the need for mechanical scanning and actuators to acquire data across a 2-dimensional image. The proposed program will establish the optical model and tools to estimate system performance, fabrication requirement and tolerance, formulate calibration procedure and evaluation criteria, develop critical optical component fabrication techniques and procedure, and chart the road for a Raman imager with improved performance that can be obtained with the state of the art fabrication techniques. In Phase II we will demonstrate a prototype imaging system and present a plan to infuse the technology into a NASA program.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Brimrose Technology Corporation(BTC)	Lead Organization	Industry	Sparks, Maryland
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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## Primary U.S. Work Locations

California

Maryland

## Project Transitions

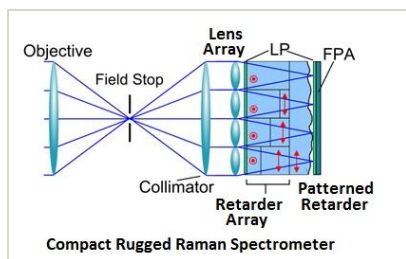
**June 2016:** Project Start

**December 2016:** Closed out

### Closeout Documentation:

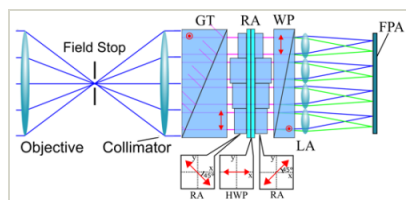
- Final Summary Chart(<https://techport.nasa.gov/file/139695>)

## Images



### Briefing Chart Image

Compact Raman Spectrometer For In-Situ Planetary Chemistry, Phase I  
(<https://techport.nasa.gov/image/131152>)



### Final Summary Chart Image

Compact Raman Spectrometer For In-Situ Planetary Chemistry, Phase I Project Image  
(<https://techport.nasa.gov/image/127011>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Brimrose Technology Corporation (BTC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

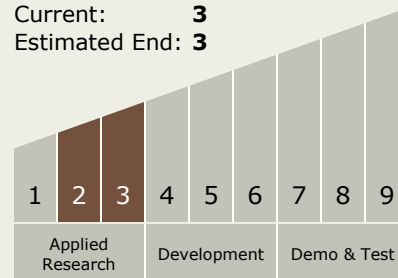
Carlos Torrez

### Principal Investigator:

Feng Jin

## Technology Maturity (TRL)

Start: 2  
Current: 3  
Estimated End: 3



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.1 Detectors and Focal Planes

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System